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ART. I.—*Medical and Surgical Notes of Campaigns in the War with Mexico, during the years 1845, 1846, 1847, and 1848.* By JOHN B. PORTER, M. D., Surgeon U. S. Army.

OUR last paper left us at Saltillo, at the end of 1846, with the quarterly reports of sick brought up, and we will now sum up the vital statistics of the Artillery Battalion for the whole year.

*Abstract of Diseases in the Artillery Battalion and Duncan's Battery, during the year 1846. From Quarterly Reports.*

DISEASES.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Continued fever . . .	1	...	2	1	7	9	4	1	12	5	4	3	49
Intermittent fever . . .	...	2	...	1	...	3	8	13	24	178	247	125	601
Remittent fever . . .	...	...	...	...	...	12	3	...	...	22	7	7	41
Eruptive fever . . .	...	...	...	...	...	...	...	...	...	1	...	...	1
Typhoid fever . . .	...	...	...	...	...	...	...	...	...	...	...	1	1
Diarrhoea . . .	20	2	4	3	3	19	14	43	41	25	18	12	204
Dysentery . . .	8	17	14	29	26	15	19	58	29	25	9	3	252
All others of digestive system	7	5	3	7	9	8	6	8	9	1	3	4	70
Catarrh . . .	45	38	18	16	5	16	5	16	36	17	18	16	246
All others of respiratory system . . .	2	...	...	1	1	...	...	2	1	0	2	3	12
Brain and nervous system . . .	3	...	3	4	8	2	...	1	...	...	1	...	22
Fibrous and muscular tissues	7	9	5	6	3	...	...	4	1	1	1	1	38
Urinary and genital organs	...	...	...	...	1	2	1	3	1	2	...	17	27
Abscesses and ulcers . . .	20	3	11	11	18	4	6	20	7	3	9	2	114
Wounds and injuries . . .	9	9	10	6	33	14	9	29	51	7	17	8	202
All other diseases . . .	9	24	9	19	8	35	25	48	17	7	13	10	224
Total taken sick in 1846 .	131	109	79	104	122	129	100	246	229	294	349	212	2104

Sent to the general hospitals . . . . .	193
Returned to duty . . . . .	1871
Discharged for disability . . . . .	3
On furlough . . . . .	1
Deserted . . . . .	2
Died . . . . .	13

Remaining sick December 31, 1846 . . . . .	2083
	82

Deduct number sick December 31, 1845 . . . . .	2165
	61

Total taken sick in 1846 . . . . .	2104
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## MEAN STRENGTH.

Months.	Officers.	Men.	Total.
January . . . . .	39	512	551
February . . . . .	40	513	553
March . . . . .	41	536	557
April . . . . .	36	454	490
May . . . . .	32	393	425
June . . . . .	34	410	444
July . . . . .	21	255	276
August . . . . .	27	507	534
September . . . . .	30	586	616
October . . . . .	29	504	533
November . . . . .	32	617	649
December . . . . .	26	485	511
Aggregate . . . . .	387	5772	6149
Average . . . . .	32	481	513

*Mortality in the Battalion and Battery, from all Causes, in all the Hospitals, in 1846.*

CAUSE OF DEATH.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Killed in battle <sup>1</sup> . . . . .	...	...	...	...	2	...	...	...	4	...	...	...	6
Died of wounds received in battle . . . . .	...	...	...	...	5	1	...	...	2	2	...	...	10
Congestive fever . . . . .	...	...	...	...	...	...	...	1	...	...	...	...	1
Continued fever . . . . .	...	1	...	...	...	...	1	1	...	...	2	1	6
Quotidian intermittent . . . . .	...	...	...	...	...	...	...	...	...	...	1	...	1
Remittent fever . . . . .	...	...	...	...	...	...	1	...	...	...	...	...	1
Dysentery, acute and chronic . . . . .	...	...	1	...	...	2	1	...	...	1	...	1	6
Icterus . . . . .	...	...	...	...	...	...	...	...	...	...	...	1	1
Phthisis pulmonalis . . . . .	...	...	...	...	...	...	...	...	1	...	...	...	1
Pneumonia . . . . .	...	...	...	...	...	...	...	...	1	...	...	...	1
Apoplexy . . . . .	...	...	...	...	...	...	...	...	...	...	1	...	1
Wounds and injuries not received in battle . . . . .	...	...	...	...	...	...	...	...	1	1	...	1	3
Angina pectoris . . . . .	...	...	...	...	...	...	...	...	1	...	...	...	1
Hypertrophica cordis . . . . .	...	1	...	...	...	...	...	...	...	...	...	...	1
Submersio <sup>1</sup> . . . . .	...	...	...	...	...	1	...	1	...	...	...	...	2
Unknown <sup>1</sup> . . . . .	...	...	...	...	...	...	1	...	...	2	1	2	6
	1	1	1	...	7	4	4	3	8	8	5	6	48

<sup>1</sup> Sudden deaths do not appear in the reports to the Surgeon-General, not having been subject to treatment. There is no record of the "unknown" cases, in relation to the cause of death, in either the Surgeon-General's or Adjutant-General's offices.

From the foregoing tables a squadron of dragoons—say 150 men—is to be deducted from the mean strength, from the 21st to the end of November, having 47 cases of disease, viz.: Continued fever, 2; intermittent, 10; remittent, 1; diarrhœa, 4; dysentery, 1; acute bronchitis, 2; catarrh, 12; wounds and injuries not received in battle, 8; all others, 7. One death from continued fever. Deduct these, and we have as correct a report of the battalion and battery for the year as can be made. Duncan's battery joined our division on the 9th of March, the day we took up the line of march to the Rio Grande from Corpus Christi.

The tables show that the strictly climatic diseases amount to 1147; deaths from them 16, or 1.40 per cent. Even admitting the deaths from unknown causes, the mortality is only 1.92 per cent. Mortality from fevers 1.29 per cent. Admit that the unknown cases died of fever, the mortality is 2.16 per cent. Mortality from diarrhœa and dysentery, 1.32 per cent.; and admitting what is not probable, that all the deaths from unknown causes were from these diseases, the mortality would be 2.63 per cent. It must be recollected that we were on the line of the Rio Grande, with regular troops. The line from Vera Cruz to the City of Mexico will show different results. Mortality per cent. for the year, 2.24 per cent.

Humboldt says of Saltillo:—

“Cette ville est entourée de plaines arides, dans lesquelles le voyageur souffre beaucoup du manque de sources.”

Of the country which constitutes the bishopric of Monterey, geology and climate, the same author speaks as follows:—

“L'évêché de Monterey, qui porte le titre pompeux de Nouveau royaume de Leon, Cohahuila, Santander et Texas, sont des régions très basses; elles présentent peu de mouvement de terrain, et le sol y est couvert de formations secondaires et d'alluvions. Leur climat est assez inégal, excessivement chaud en été, et d'une fraîcheur extraordinaire en hiver, lorsque le vents du nord chassent des colonnes d'air froid de Canada vers la zone torride.”

The winter climate of Saltillo is more severe than that of Monterey. On the morning of November 25, 1846, the ice was one-eighth of an inch in thickness; December 19th to the 22d very cold, and on the morning of the 20th there was ice; January 1, 1847, cold, and a snow-like atmosphere; January 7, a very cold morning, following a very cold night, and thick ice on still water; January 8, last night very cold, and the ice this morning is at least half an inch thick. From our entrance into the town, November 16, to the time of our departure, January 9, there was no rain; the fields being watered by a system of irrigation.

In the country around Saltillo, there are large quantities of the maguey, *Agava Americana*, from the juice of which is made the favourite *pulque* of the Mexicans. This plant was cultivated by the ancient inhabitants, for Bernal Diaz mentions it on the march of Cortez from Vera Cruz to the City of Montezuma, in 1519: “Y desde aquellas sierras pasamos adelante, y era

llano, y habia muchas casas de labranzas de maiz y magiales, que es de lo que hacen el vino." Clavigero says: "El vino mas comun, y el mejor de los Mexicanos es el de maguei, que ellos llaman *octli*, y los Españoles *pulque*." Humboldt (in 1802) and Bullock (in 1823) both speak of the large groves of the maguey, and the immense consumption of pulque by the inhabitants. The Mexicans consider the pulque a wholesome beverage, and it certainly is much more so than the *aguardiente* of the country. Many of our men fortunately became attached to it, it being a much better drink on every account, better for the individual and better for the service, than the Anglo-Saxon alcoholic stimulants. Humboldt says that the pulque is regarded *comme stomachique, fortifiant, et très nourrissant*. In the *New York Medical Journal* for September, 1851, there is an interesting report from Assistant-Surgeon Glover Perin, U. S. A., to the Surgeon-General, in relation to the maguey, from which report it appears that the expressed juice of this plant is an undoubted antiscorbutic.

*Jan. 9th, 1847.* Our division was put *en route* for the mouth of the Rio Grande, via Monterey, Camargo, and Matamoras, Vera Cruz being the object of the movement. This march was a severe one.

*10th.* Last evening and in the night there was rain, and it rained pretty steadily through the day. The march was cold and uncomfortable. Encamped at Pass Rineonada.

*11th.* Last night was uncomfortably cold, and this morning the ground and wet tents were stiffly frozen. During the whole of this day's march there was a cold easterly wind, the sky was clouded, and everybody was uncomfortable. I have rarely suffered more from cold.

*12th.* Last night encamped five miles from Monterey. A bitter cold night. Fine day.

*13th and 14th.* Warm. Road very dusty.

*15th.* A long, hot, dusty, and disagreeable march. Encamped at Cerralvo.

*16th.* A norther came up, cold, disagreeable, with clouds of dust through the day.

*17th.* Cool, clouds of dust.

*18th.* Quite warm.

*19th.* The first part of last night quite warm, but in the night the wind changed, and it blew a norther before morning. Clouds of sand flying to-day. A horribly cold and disagreeable march. Arrived at Camargo.

By the last of the month an encampment was fully formed on the Rio Grande, preparatory to embarkation for Vera Cruz, about equidistant from Matamoras and the mouth of the river, a few miles from the battle-field of Palo Alto; hence the name of our camp, Palo Alto. Here the battalion was broken up, the companies composing it joining their respective regimental colours.

Communication to the Surgeon-General:— \* \* \* \* \*

"Our entire division was embarked for Vera Cruz by the 20th of February, 1847, the rendezvous for the whole fleet of transport ships being Lobos Island, off the Mexican coast, in lat.  $19^{\circ} 26' N.$  March 2d. Made sail for Point Anton Lizardo, about 12 miles below Vera Cruz, lat.  $19^{\circ} 4' N.$ , lon.  $95^{\circ} 59' W.$ , where we arrived on the 5th. March 9th. Our division landed on the beach near Vera Cruz, nearly opposite the island of Sacrificios, a little before sunset, and

immediately took possession of the sand-hills in front. Patterson's volunteer division and the reserve under Gen. Twiggs followed during the night. The town was invested as rapidly as possible, and on the 22d our mortar batteries opened, which compelled the enemy to send proposals of accommodation on the 26th, and on the 29th we took possession of both the town and the castle of San Juan de Ulua by articles of capitulation."

The site of modern Vera Cruz was discovered by Juan de Grijalva, in 1518. Bernal Diaz, who was in the expedition, gives a description in his *Historia Verdadera de la Conquista de la Nueva España*, tom. ii. capitulo XIV. as follows:—

"Desembarcados en unos arenales hicimos chozas encima de los mastos y medaños de arena, que los hay por allí grandes, por causa de los mosquitos, que habia muchos, y con bateles ondearon muy bien el puerto, y hallaron, con el abrigo de aquella Isleta estarian seguros los navios del Norte, y habia buen fondo."

According to the above account of Bernal Diaz, it would seem that nearly everything was presented more than three hundred years ago, as at the present time; the sands, the mosquitos, the little isle named by the discoverers San Juan de Ulua, the port, the anchorage, and the northers.

Hernando Cortes landed on the same spot the year after the discovery by Grijalva, as related by Bernal Diaz:—

"En Juárez Santo de la Cena del Señor, de mil y quinientos y diez y nueve años, llegamos con toda la Armada al puerto de San Juan de Ulua. \* \* \* Y otro día, que fué Viernes Santo de la Cruz, desembarcamos, así caballos como artillería, en unos montones de arena, que no habia tierra llana."

Clavigero, himself a Vera Cruzano, gives the history of the foundation of the different cities:—

"La primera, fundada en 1519 cerca del puerto de Quiahuiztlan, que conservó despues el nombre de Villa Rica; la segunda, la antigua Vera Cruz, fundada en 1523 o' 1524; y la tercera, la nueva Vera Cruz, que hoy conserva este segundo nombre, y fué fundada por orden del conde de Monterey, virey de México, á fines del siglo XVI., y recibo de Felipe III. el titulo de ciudad en 1615."

It appears that La Villa Rica de la Vera Cruz was founded in 1519; that the second town, la antigua Vera Cruz, was built in 1523 or 1524; and the modern town towards the end of the sixteenth century, receiving the privileges of a city in 1615. The first town would probably have occupied the site of the modern one but for the uninviting appearance of the place, the sand-hills, and the mosquitos and other insects; for Bernal Diaz says, in 1519:—

"Y dexallos he agora, y pasemos adelante, y digamos, que en aquellos arenales donde estabamos habia siempre muchos mosquitos zaneudos, como de los chicos, que llaman xexenes, y son peores que los grandes, y no podiamos dormir dellos."

Villa Rica de la Vera Cruz, built near the ancient Mexican town of Quiahuiztlan, and about 40 miles (Bernal Diaz says *doce leguas*) from the site of modern Vera Cruz, was given up by reason of its exposed situation, the ships

having no protection from the northerners; and Vera Cruz Antigua, at the mouth of the River Antigua, now called Vera Cruz Vieja, to distinguish it from the new town, or Vera Cruz Nueva, was abandoned on account of its insalubrity.

The geology of modern Vera Cruz is soon given, in the language of Humboldt: "Les sables couvrent les formations secondaires qui reposent sur le porphyre de l'Encero." Bullock, 1823, says, after Humboldt:—

"The whole town, as well as the castle, is built of coral (*Madrepora* mean-dritics); and the lime that forms the cement is of the same material, and the same is used for the roofs and pavements; it is so hard that in some places it receives, from friction, a polish like marble."

Malte-Brun says:—

"La jolie ville de *La Vera Cruz*, siège des autorités de l'État qui porte son nom, ne doit rien aux faveurs de la nature. Les rochers de madrépores dont elle est construite ont été tirés du fond de la mer; la seule eau potable est recueillie dans des citernes; le climat est chaud et malsain; des sables arides et brûlants entourent la ville au nord, tandis qu'on voit s'étendre au sud des marais desséchés."

Vera Cruz is situated in the low country, *tierra caliente*, nearly on a level with the sea, in lat.  $19^{\circ} 11' 52''$  N., lon.  $96^{\circ} 8' 36''$  W. It is a walled town, in shape a parallelogram, with strong batteries at the angles, being perhaps half a mile in width, and two miles in length. The town is well built, with broad streets, which are easily drained, the gutter being in the middle of the street. In the rainy season the water rushes down these gutters, and carries the offal to the seashore, from which it can be easily removed. Back of the town, beyond the sand-ridges, are some swamps, which are supposed by some, as Poinsett and Prescott, to be the principal cause of insalubrity. But Vera Cruz is so situated in relation to the immediate interior, that the streets can be daily washed; and I am informed by a gentleman of undoubted veracity, recently from the place, that the streets have been daily washed during the past year (1852), the consequence being that only seven cases of yellow fever were reported within the year. Having little confidence in city reports of vital statistics, I am willing to multiply 7 by 40, and then compare disease and death in Vera Cruz with disease and death in Norfolk, Wilmington, Charleston, Savannah, and New Orleans, for 1852. The comparison would be highly favourable to Vera Cruz. In 1847, under the most unfavourable circumstances, in a state of war, having sustained a siege, and in wretched police, Vera Cruz was much less afflicted with malignant yellow fever, bad as the disease was, than New Orleans, and so it will probably continue to be. During the past year, Vera Cruz has undoubtedly been the best policed city on this continent.

The foregoing is sufficient for the geology and medical topography of the city.

*Population.*—This has diminished in a series of years. In 1847, the town might have contained 4000 or 5000 inhabitants; Brantz Mayer estimates the

number at 6500; Bullock, 1823, gives the number as about 7000; and Humboldt says, 1802: "La population habituelle de Vera Cruz, sans compter la milice et les gens de mer, est de 16,000."

*Climate.*—Extracts from the Meteorological Register of 1847.

MONTHS.	DETACHED THERMOMETER.					WET-BULB.		Highest degree.	Lowest degree.	Hottest daily mean.	Coldest daily mean.	Rain in inches.
	Sunrise.	9 A. M.	3 P. M.	9 P. M.	Daily Mean.	Sunrise.	3 P. M.					
June	77.83	81.55	83.36	81.56	80.60	76.00	78.79	85	72	83.	77.	4.15
July	75.13	80.00	82.06	80.93	78.59	74.06	77.97	84	72	80.5	77.	16.70
August	75.51	81.25	83.03	80.80	79.27	74.29	78.71	85	73	81.5	77.5	9.50
September	76.10	80.73	82.26	80.63	79.18	73.69	77.31	85	71	81.	77.	3.95
October	74.87	78.45	79.16	78.51	77.01	72.09	74.51	82	68	80.	71.	4.05
November	72.73	74.10	75.65	75.31	74.19	67.26	68.93	82	64	78.5	65.5	0.54
December	66.71	67.97	68.61	68.45	67.67	52.35	52.03	75	58	74.	62.	0.50

The foregoing table is but an approximation to correctness, for the assistant to whom the Meteorological Register was committed was not particular about entries, and many blanks occur in the tables. Humboldt and Malte-Brun have, however, given the results of extended observations.

*Tableau des Bandes Isothermes (Thermom. Centigrade).*—MALTE-BRUN.

Bandes isoth. audessus de 25°.	NOMS DE LIEUX.	Latitude.	Longitude.	Hauteur en toises.	Temp. moyenne l'année.	Temp. moyenne de l'hiver.	Temp. moyenne du printemps.	Temp. moyenne de l'été.	Temp. moyenne de l'automne.	Maximum.	Minimum.
	La Kaire	30.02	28.586	0	22.4	14.7	23.1	29.5	21.9	29.9	13.4
	La Vera Cruz	19.11	98.210	0	25.4	22.2	25.5	27.5	20.5	27.7	21.7
	La Havane	23.10	84.330	0	25.6	21.8	26.1	28.5	23.1	28.8	21.1
	Cumana	10.27	67.350	0	27.7	26.8	28.7	27.8	26.8	29.1	26.2

*Température Moyenne de Vera Cruz (Thermom. Centigrade).*—HUMBOLDT.

Mois.	Pas de vomito prieto.		Epidémies du vomito prieto.	
	1792.	1793.	1794.	1795.
Janvier . . .	21.5	20.8	20.6	20.7
Février . . .	21.5	22.3	22.8	21.0
Mars . . .	23.7	22.8	22.6	22.5
Avril . . .	24.2	26.1	25.3	24.0
Mai . . .	27.3	27.9	25.3	26.3
Juin . . .	28.5	27.3	27.5	27.2
Juillet . . .	27.5	26.9	27.8	27.7
Août . . .	28.3	28.1	28.3	27.8
Septemb. . .	27.5	28.1	27.1	26.1
Octobre . . .	26.3	25.5	26.1	25.0
Novembre . .	24.7	24.4	23.0	24.3
Décembre . .	21.9	22.1	21.7	21.9
Températ. moyenne de l'année . .	25.2	25.2	24.8	24.5

"Côtes orientales de la Nouvelle-Espagne, température moyenne de l'année 25° 4'. Vera Cruz, lat. 19° 11', le jour communément dans la saison la plus chaude 27° à 30°; la nuit 25°, 7—28°; dans la saison froide le jour 19° à 24°; de nuit 18°—22°. Plus grande chaleur de toute l'année 36°, la moindre chaleur 16°. La température moyenne du mois de Décembre diffère de celle du mois d'août de 5°, 6°."—HUMBOLDT.

It is Humboldt's opinion that the heat and humidity of the atmosphere favour the production of miasms, and augment the organic irritability, thus acting as predisposing causes of disease.—*New Spain*, vol. iv. p. 216.

Clavigero says:—

"Las costas son muy calientes, y por lo comun, humedas y malsanas. Este ardor exesivo, que promueve el sudor aun en los meses del invierno, proviene de la suma depresion de las costas con respecto a las tierras interiores, y de las grandes masas de arena que se reunen en la playa, como sucede en Vera Cruz, mi patria." \* \* \* "Algunas tierras, como las inmediatas a las costas, son calidas, y por lo comun, humedas, y malsanas; otras, como casi todas las interiores, son templadas, secas, y sanas."—*Traducida del Italiano*, por Jose Joaquin de Mora.

Brantz Mayer gives a table showing the quantity of rain which fell in a series of years. Reduced to inches.

Year.	Inches.	Year.	Inches.
1822	157.5	1827	254.8
1823	188.9	1828	146.0
1824	128.1	1829	278.3
1825	127.1	1830	216.0
1826 <sup>1</sup>	64.4		

"The amount of water which has fallen in each year very far exceeds the quantity known to fall annually in any part of the United States. It is not, however, difficult to account for the difference. Vera Cruz, situated at the bottom of the Gulf of Mexico, backed by a lofty range of mountains rising beyond the limits of perpetual congelation, must necessarily be the recipient of the immense body of water held in solution by the hot intertropical air, and which is constantly carried along by the trade winds, to be condensed against the cold mountains."

The City of Mexico is distant from Vera Cruz only about 250 miles, in a direct line; Humboldt says 69 leagues, which is nearly the same, allowing for the difference in measurement, and is 7,470 feet above the level of the sea—an elevation of nearly 30 feet (29.88) to the mile; Puebla de los Angeles is 7,198 feet above the sea; Perote, 7,723; and Jalapa, only 50 miles from Vera Cruz, is 4,330 feet above it, or an elevation of 86.6 feet for each mile. High above these cities are the mountains. Popocatepetl, 17,720 feet above the sea; the Cofre de Perote, 13,415 feet; and nearer still to Vera Cruz is the famed Orizaba, 17,374 feet above the sea, only 346 feet less in height than Popocatepetl itself, the second mountain in all Mexico, Iztaccihuatl being only 15,702 feet high. Orizaba, the ancient Citlaltepétl, crowned with eternal snows, always visible from Vera Cruz in a clear atmosphere, was seen by the bold Spanish navigators in 1518, as described by Bernal Diaz:

<sup>1</sup> This year was remarkably dry; and was, moreover, characterized by universally severe weather upon the coast, and a great destruction of shipping property.



“E'luego se parecieron las grandes sierras nevadas, que en todo el año estan cargadas de nieve.” This brief survey may account for the heavy annual rains in Vera Cruz and on the coast.

The *northers* give another peculiarity to the climate. They are common from October to March or April, and they have been known to blow so strongly and steadily as to interrupt all communication between the town of Vera Cruz and the Castle of San Juan de Ulua for fifteen days together. The inhabitants look upon these severe storms much in the same light as the residents of New Orleans and other southern cities of the United States regard a severe frost—that they purify the atmosphere and check the progress of yellow fever.

*Diseases.*—The principal ones in Vera Cruz, and on the whole coast of the *tierra caliente*, are diarrhœa and dysentery, and tropical fevers, particularly yellow fever, or *vomito prieto*. Yellow fever is the frightful disease of this climate and of this town. Vera Cruz is on the route to the City of Mexico, foreign travellers pass through it on their way to a more temperate climate; they talk about it and write about it, and hence its celebrity; but it is very much to be doubted if yellow fever is so severe as in Tampico and other towns near the coast; and it is believed that Vera Cruz is quite as salubrious as New Orleans. But yellow fever is severe enough in Vera Cruz, in all consequence.

Many years ago, even before the Spaniards invaded Mexico, a malignant disease or fever prevailed, termed by the ancient inhabitants *matlazahuatl*.

“Long-temps avant l'arrivée de Cortéz, il a régné presque périodiquement à la Nouvelle-Espagne un mal épidémique que les naturels appellent *matlazahuatl*, et que quelques auteurs ont confondu avec le vomito ou la fièvre jaune.”  
—HUMBOLDT.

Both Clavigero and Humboldt are of the opinion that the epidemic in question was not yellow fever, for the following reasons:—

1. The epidemic, *matlazahuatl*, attacks exclusively the native or ancient Indian race.
2. The European races and their descendants were not attacked by this fatal epidemic (*typhus mortel*).
3. Yellow fever attacks strangers, Europeans, and their descendants.
4. Yellow fever rarely attacks the ancient Indian race.
5. The principal seat of yellow fever is in the maritime region, directly on the coast in the *tierra caliente*, where the climate is excessively hot and humid.
6. The *matlazahuatl* prevails in the interior, on the central plateau, in excessively cold and dry regions, more than 1000 feet above the sea, and high above the *tierra caliente*.

Humboldt is of opinion that the *matlazahuatl* extended to New England, carrying off nineteen-twentieths of the aborigines in 1614, thus making way for the Puritan colonies.

It is not known at what time yellow fever first appeared at Vera Cruz, or even on the continent of America. Antonio de Ulloa gives the following account :—

“No se havia conocido en Cartagena, y su costa el vomito prieto hasta los años de 1729 y 1730: en el primero disminuyò en mucha parte las Tripulaciones de los Navios de Guerra, que Comandaba Don Domingo Justiniani, y estaban alli de Guarda-Costas; las quales experimentaron este Accidente en Santa Marta: siendo terror de los que quedaron vivos el estrago, que havia hecho en los muchos, que murieron.” (The black vomit was not known in Carthagenæ, or on the coast, until the years 1729 and 1730. The first time, it thinned the crews of the ships of war, under Don Domingo Justiniani, which were there for the protection of the revenue. They encountered this affliction at Santa Martha, and it remained the terror of those who survived the mortality.)—ULLOA, tom. i. lib. i. cap. 5.

Speaking of the diseases of Guayaquil, Ulloa says :—

“Ademàs de esta enfermedad, que es la mas comun, se ha experimentado tambien la del vomito prieto desde el año de 1740, en que haviendo llegado la armada de galeones del *sûr* retirandose de Panamá por causa de la guerra para assegurar el Tesoro en las Provincias de la Sierra, se padeciò la primera vez esta epidemia, y murió much agente; assi de la que llevaba la misma armada, como de la forastera, que se hallaba alli, y algunos patricios aunque muy pocos. La ocasion, y circunstancias de este accidente ha hecho creer, que lo introduxeron los mismos de la armada hallandose infestados de èl, desde Panamá, y juntamente inferir, que se contrae de unos à otros: pues el clima, que hasta entonces no lo havia causado en tantos forasteros, como por èl trafican, no se lo huviera participado entonces, si los hálitos de los yà picados no huviesen introducido la malignidad” (Besides this disease [intermittent], which is the most common, that of the black vomit has been known since 1740, in which year arrived the fleet of galleons from the south, retiring from Panama, in consequence of the war, in order to protect the treasure in the provinces of the Sierra, when this epidemic afflicted for the first time, and many persons died, as well of those who were in that fleet as of strangers who chanced to be present, and some natives, although of them very few. The occasion and the circumstances attending this affliction have caused the belief, that it was introduced by the people of the fleet, who had found themselves infected with it from the time they left Panama; and the inference was, also, that it is to be contracted one of another; since the climate, which, until that time, had not produced it among the many strangers who traffic thither, could not have given it them, if the clothes of those already stricken had not introduced the disease.)—Tom. i. lib. iv. cap. vi.

Brantz Mayer remarks :—

“It is said that, in the early period of this country, Vera Cruz was not so sickly as of late years; and that, although there were occasional attacks of violent fever, it was not until 1699 that the black vomit made its appearance. In that year an English vessel arrived with a cargo of slaves, and with them came this fatal disease.”

Clavigero affirms that yellow fever is of recent origin, and that it did not appear much before 1729. He says :—

“El vomito prieto, o negro, que tambien parece enfermedad endemica, es bastante moderno, y solo se padece en algunos puertos de la zona torrida, frecuentados por los Europeos. Los primeros que lo experimentaron fueron unos marineros de buques Europeos, que despues de los malos alimentos de la navegacion, comian en aquellos puertos con exeso las frutas del pais, y bebian aguardiente. D. Antonio Ulloa asegura que en Cartagena, uno de los puntos mas insalubres de America, no se conoció el vomito antes del año de 1729, y

empezó en la marinería Europea de la escuadra que aportó allí, mandada por D. Domingo Justiniani."

I am indebted to Buckingham Smith, Esq., late Secretary of Legation to the Republic of Mexico, for the following interesting history of the disease, in the Spanish language, by Don Manuel de Viya, one of the oldest and most respected citizens of the republic, who has long resided at Vera Cruz. The translation is what follows :—

"The disease called yellow fever (*fiebre amarilla*), known in America by the name of *vomito prieto*, dates its appearance at Vera Cruz from the latter end of June, 1794, at which time arrived Don Miguel de la Grúa Talamanca, Marquis of Branciforte, in the ship of war Europa, of 74 guns, commanded by Captain Don Jose Valdes. The ship had sailed from Carthagená, in the Mediterranean, where there had just arrived another ship, El Miño, just returned from Constantinople, where she had been on the duty of taking out an ambassador, or *chargé d'affaires*. Although at the time of the arrival the pest was known to be in Turkey, no precaution was taken to put the Miño in quarantine, so that it infected the bay in which was the Europa, which, in a few days, went to Cadiz to receive the viceroy on board; and, although the disease did not show itself during the voyage, on her reaching Vera Cruz it fully appeared in the hot weather, the captain, Valdes, being one of the first victims of it, with several officers and many of the crew. As the disease had never been known in Vera Cruz until this time, the physicians and population, who until then had not seen or heard of it, were terrified at its character and its ravages. They called it the *vomito prieto*, because of the colour of the corrupted blood which the sick threw up from the stomach. At that time there happened to be at Vera Cruz, passing through, one Don Xavier de Balmis, who had been sent by the Court of Madrid to spread the vaccine matter in certain places in the Americas and in the Philippine Islands, who, giving himself the full importance of a physician, was not above a charlatan; and who, with an air of assurance, wished to have it believed that in his visit to Asia he had had an opportunity of making himself acquainted with the disease, and that he knew how to treat it; but what he accomplished was only to kill some persons for whom he was called to prescribe. In one house were the captain and the purser of the ship with severe fever; Balmis said that the former would recover and that the latter would die. The doctors all thought otherwise, and so it turned out, for the purser escaped with his life, and the captain died. The captain's death was universally regretted, for he was highly esteemed as an officer in the Spanish navy, and was also of a distinguished family."

"It may be mentioned that in 1795 the fever went to Havana and other places, where it has since become endemic. With surprise, it was remarked when it came here for the first time, in 1794, and it was the same afterwards, that it did not attack the natives of Spain, or of America, who were acclimated. The merchants who had lived some time in Vera Cruz escaped, as also in Cadiz, when the disease appeared there. The natives of Vera Cruz never have it, even after an absence of years, and no instance is known of their being attacked by the dreadful disease while at other places."

The foregoing narrative of Don Manuel de Viya is probably incorrect in some particulars: 1. In regard to yellow fever being brought from Turkey by the Miño. 2. In regard to the Europa. It is not probable that the contagion was received from the Miño in the bay of Carthagená, Spain; and that it remained dormant so long as to enable her (the Europa) to make a voyage to Cadiz, receive the viceroy, and land him at Vera Cruz before the disease would show itself. 3. In regard to the yellow fever being seen

for the first time at Vera Cruz in 1794. An aggravation of the disease probably occurred in that year, the yellow fever being also very severe in many portions of the United States at the same period of time; and for many years previous it may not have been seen to any great extent at Vera Cruz, thus creating the impression that the disease was first seen when it broke out with such violence in the epidemic of 1794.

It is an interesting fact that the malignant yellow fever of 1794 was not taken by the natives, nor even by acclimated foreigners. Neither have such persons taken the disease in subsequent epidemics. The fact is worth noting when we come to the question of contagion.

The opinion of Humboldt is probably correct, that the same physical causes must have produced similar results, as at the present day; and that yellow fever must have been known as soon as the coast became settled by Europeans, who at first proceeded rapidly to the higher regions of the interior.

According to Humboldt, the extreme limit of yellow fever between Vera Cruz and Mexico City is at Eneero, 928 metres, or nearly 3,045 feet above the level of the sea, where the oak grows. But little of the disease, however, is seen above the National Bridge, if ever above that point.

*Identity of the Yellow Fever of Vera Cruz with that of the United States.*—Humboldt, from the descriptions of Makittrick, Rush, Valentin, and Luzuriaga, is of opinion that the yellow fevers of Vera Cruz, Carthagena, Havana, and the United States, are identical.

“Il est certain que le *romito* qui est endémique à Vera Cruz, à Carthagène des Indes et à la Havane, est la même maladie que la fièvre jaune qui, depuis l’année 1793, n’a pas cessé d’aceabler les habitants des Etats-Unis.”

Humboldt’s opinion is undoubtedly correct, for the yellow fever of Vera Cruz is certainly the very same disease as the yellow fever of Florida, Mississippi, Louisiana, and Sullivan’s Island, near Charleston, S. C.

*Contagion.*—If yellow fever in the United States be the same disease as the *vomito prieto* at Vera Cruz, of which there is no doubt, then it will follow, that if one is contagious so is the other, *et vice versa*. Humboldt asserts, roundly: “Il est incontestable que le *vomito* n’est pas contagieux à Vera Cruz.” Again: “Sur le continent de l’Amérique équinoxiale, la fièvre jaune n’est pas plus contagieuse que ne le sont les fièvres intermittentes en Europe.” He quotes Makittrick, Walker, Rush, Valentin, Miller, Wistar, Blane, Cathral, “*et d’autres médecins distingués*,” who have practised in the Antilles and in the United States, to prove that the disease is not contagious in either of those countries. But he thinks that the yellow fever is contagious in other countries:—

“Enfin, en avançant au nord-est, en Espagne, nous trouvons la fièvre jaune indubitablement contagieuse, comme le prouvent les exemples des personnes qui s’en sont préservées par l’isolement quoiqu’elles fussent au milieu du foyer du mal.”

In relation to the contagiousness of yellow fever in the United States and Vera Cruz, I have no hesitation in giving a decided opinion; which is, that it is not contagious. It is desirable to be understood; and I mean to affirm, in the most positive language, that the yellow fever of the United States and the *romito prieto* of Vera Cruz are one and the same disease; and that there is not the shadow of a reason for believing that it is contagious—always allowing an ample margin for difference of opinion, the contagionist and the non-contagionist having an equal right “to worship according to the dictates of his own conscience.” The yellow fevers of St. Augustine, Florida, 1841; Pascagoula, Miss., 1848; Charleston, S. C., 1849 and 1852; and Sullivan’s Island, near Charleston, 1852; were not imported, but were indubitably of domestic origin—they originated in the places mentioned, and the evidence in support of the assertion may be given hereafter.

Of the fevers of Spain I know nothing. I know nothing of the Andalusian fevers, Gihraltar fever, the fevers of Barcelona, Cadiz, Malaga, Seville, or Xeres; I know nothing of the Havana, St. Domingo, Barbadoes,<sup>1</sup> or Jamaica fevers; nor do I know more of the African typhus, Bulam fever, jungle fever, Bengal fever, mal de Siam, Aseension fever, Boa Vista fever, or other Eastern fevers, never having seen them. It may be that the Eastern fevers are not yellow fever; that they are all sorts of malignant fever, as remittent, congestive, typhus, &c.; and that Humboldt placed too much confidence in a celebrated commission; but of all this I know nothing. One thing, however, I must be allowed to judge of somewhat, the nature of yellow fevers in the United States and at Vera Cruz, having seen them. Seeing is believing.

It is amusing to read Humboldt on one point: “La Havane, Vera Cruz, et les ports des Etats-Unis, s’acuseut mutuellement de recevoir l’un de l’autre le germe de la contagion.” This is human nature the world over, for our neighbour’s farm or plantation is always more insalubrious than our own; and it is well that it should be so, for the conviction conduces to happiness.

“There is nothing more difficult to define, according to the common use of the term, than a good climate. It means a place where the well are robust and hardy, or where few violent diseases are known, or where the yellow fever does not rage, or where not more than half the people have the fever and ague; in fine, almost any place that has any resources, and where lands or lots will sell in market. For, however people may express themselves as to the salubrity of places in their vicinity, they never acknowledge their *own place* to be unhealthy as long as anybody has life enough left to deny it. Let any one deny this who has travelled through our country, if he can. Let him refresh his recol-

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<sup>1</sup> One hundred years ago, Hillary says, in his work on the *Diseases of Barbadoes*: “I never could observe any one instance where I could say that one person was infected by, or received this fever from, another person who had it; neither have I even seen two people sick in this fever in the same house at or near the same time, unless they were brought into the same house when they had the fever upon them before they came. From whence we may conclude, that it has nothing of a contagious or pestilential nature in it; and that it is a very different fever in all respects, as it will more fully appear hereafter.” P. 107. From this passage it appears that Hillary was not a contagionist, and his testimony is valuable.

lection as to the number of places that have been resolutely pronounced healthy by *one* half, while the *other* half of their inhabitants were sick. St. Louis has been declared healthier than Boston, Cincinnati than Albany, and, to cap the climax of falsehood, New Orleans has been claimed to be healthier than *any* northern city."

*Causes of Yellow Fever.*—Malte-Brun says: "L'humidité des côtes occasionne des maladies dangereuses aux quelles sont exposés les Européens non acclimatés." Humboldt gives the following causes of the disease at Vera Cruz: 1. Crowding of the population. 2. Bad ventilation. 3. High temperature. 4. Humidity. 5. Putrid emanations, or miasmata. To produce the perfect development of yellow fever, the following conditions seem to be necessary, viz.: 1. The place must be in a low latitude, almost always below 35°. 2. A low country. 3. On or near the sea. 4. Long-continued heat. 5. A high dew-point. 6. Humidity. 7. Dense population. 8. Animal and vegetable decomposition. In view of these causes, is it necessary to call in the aid of contagion? May we not ask, with Humboldt: "N'est-il pas plus facile d'admettre que l'atmosphère de Vera Cruz contient des émanations putrides qui, respirées pendant le plus court espace de temps, portent le désordre dans les fonctions vitales?"

*Diagnosis.*—This is most important to the patient first attacked, and it is of the greatest importance to him at the very first visit of the physician, for on this his life may depend. After the second or third stage has begun, of what use is it to the sick person for the physician to find out, for the first time, that the disease is yellow fever? The case may stand as a beacon, but the patient is launched into eternity. What are the diagnostics? the pathognomonic symptoms? For on them the salvation of the first patients in an epidemic may depend. Louis gives the symptoms at the commencement of the disease, thus:—

"Headache; a pricking sensation in the eyes, which become almost immediately red and suffused; pains in the limbs, and more or less marked febrile symptoms. These symptoms continue. To them are joined pains in the epigastrium; nausea; spontaneous vomitings some twelve or fifteen hours afterwards, rarely earlier, and sometimes even later. Anxiety and restlessness are mentioned in the first stage, and then M. Louis goes on to the third and fourth days, when the diagnosis is, unfortunately for the patient, but too easy."—*Translation of M. Louis, by Dr. Shattuck, p. 287.*

Headache is common in fevers, but if M. Louis regards the intense pain in the frontal and orbital regions, so common and diagnostic of yellow fever, then we have two marked pathognomonic symptoms, including the "pricking sensation in the eyes, which become almost immediately red and suffused." Pains of the limbs are common in all southern fevers; pains in the epigastrium are not uncommon in all fevers, and they are not always present in yellow fever; "nausea and spontaneous vomiting" are present, or not, according to circumstances. Then, according to M. Louis, the only diagnostics are, in the early stage, intense supraorbital pains, and redness and suffusion of the eyes.

Having been at the pains to look over several authors on yellow fever, I can find no other pathognomonic symptoms, among a host of symptoms common to all fevers.<sup>1</sup>

Therefore, below 35° N. latitude, in a low country near the sea, in long-continued heat, a high dew-point, humidity, with other apparent causes of fever, whenever a physician is called to a patient early in the disease, the earlier the better, with these pathognomonic symptoms—severe pain in the frontal and orbital regions, pain and tenderness on slight pressure of the globe of the eye, and redness and suffusion of the eyes, he must be on the alert, and it is well for him to regard the very first case as yellow fever. If, at the same time, there is a dusky hue of the skin, much the most common in persons with dark complexion, he may be certain that he has no ordinary fever to contend with, and he may as well name the disease *yellow fever* without delay. Never wait until a second visit, for by the time that is made the fate of the patient may be hopeless.

*Vera Cruz in 1847.*—Immediately after the surrender of the city, preparations were made for establishing a general hospital in the old Franciscan convent, San Francisco, near the gate leading to the mole, consisting of a very large church, a smaller church, or chapel, and numerous suites of upper rooms around the convent plaza—a convenient pile of buildings, facing the sea, well ventilated, with good water. Bullock speaks of this water, in 1823, as the best in the city. To organize this hospital was no small undertaking. There was not a single steward except invalid and incompetent ones; an invalid ward-master; the employed physicians were almost universally incompetent; no well men were left for cooks and nurses when the army marched into the *tierra templada*; there was not a single kitchen, table, bench, bunk, privy (with scores of dysenteric patients), chamber utensils; in a word, there was nothing but the miserable sick; and, under these circumstances, the machine had to be put in motion. *Hic labor hoc opus fuit.* But this discouraging state of things was gradually removed, as the following extracts from my Notes will show:—

“*April 7th, 1847.* Took charge of the general hospital this morning; Gen. Twigg’s division to march this afternoon, and his sick are coming in rapidly. Bales of blankets were opened and distributed among them, and some boiled rice for food.

“*9th.* All the sick of Gen. Patterson’s division received, principally dysenteric patients.

“*11th.* Troops leaving and sick arriving.

“*12th.* Hospital filled with sick. Hot weather from the first of the month.

“*13th.* Gen. Worth’s division marched, and the whole of his sick had to be provided for.

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<sup>1</sup> Hillary gives some of the symptoms when the patient is first seized, which he says are soon “attended with acute darting pains in the head and back; a flushing in the face, with an inflamed redness and a burning heat in the eyes; great anxiety and oppression about the præcordia; these and the burning heat and pain in the eyes are the pathognomonic symptoms of this fever especially, &c.” Hillary’s description applies to such cases as could scarcely admit of doubt.—*Diseases of Barbadoes*, p. 108.

"15th. Hospital getting in better condition.

"17th. The sick of Gen. Quitman's division were brought in this afternoon; and it was found necessary to take possession of the Mexican Military Hospital, San Carlos, except the small portion occupied by a few wounded Mexicans.

"This hospital continued in our hands as a branch of the main hospital.

"18th. Hospital getting in better order."

From this date, more or less sick were admitted daily.

*Yellow Fever of 1847.*—This did not break out so soon as might have been expected, considering the hot weather, the filth accumulated during the siege, and the dissipation of our troops after the surrender of the city.

"May 4th. For two or three days severe congestive fever has been common among labourers in the quartermaster's department—Irishmen, and very dissipated. From the first of the month malignant fever may be said to have commenced. These cases were generally very severe and rapidly fatal. Cold limbs, profuse cold sweat, feeble pulse, stertorous respiration, vibices, &c., were quite common, even on their entrance into hospital. These hired labourers were exposed to the sun and rain; they had more money to spend, and were less under restraint and discipline than the soldier; were very dissipated; and did not report sick under two, three, or four days after the attack, while the sick soldiers reported immediately.

"7th. Very warm weather. To-day a soldier died of the *vomito*. He was a volunteer, and very sick when he came to the hospital; had been wandering about the country; might have been a deserter, and might not, as no account could be given of him, and he was moribund when admitted. This was the first case of real yellow fever, and from this time it soon became prevalent."

*Treatment of the Vera Cruz Yellow Fever in 1847.*—In my report to the Surgeon-General for the quarter ending 30th of June, are the following remarks: "In the treatment of yellow fever, I regard quinia as the sheet-anchor, and am abundantly satisfied with its effects in the yellow fever of Vera Cruz. When the yellow fever first broke out, in May, it was with violence, and I was in the habit of combining the sulphate of quinia and calomel in several of the first doses, at the same time employing free cupping, leeches, in many cases general bleeding, sinapisms, mustard pediluvia, &c. I found that many of my patients were more susceptible to the mercurial influence than had been anticipated; and, in consequence, some of them had severe ptyalism. All those who had ptyalism recovered, though attacked ever so severely; not one died. This was satisfactory, notwithstanding the disagreeable attending circumstances."

"During a part of May and June, general bleeding was resorted to in almost every case, there being strong arterial action, severe pain of the frontal region and eyes, &c. It answered a most excellent purpose. Then came a dose of calomel and quinia, &c. &c."

The above is an outline of the general treatment, but it may be advisable to enter into particulars.

It was a standing rule in the Vera Cruz General Hospital that, when a patient was brought in with yellow fever, the warm mustard bath, or pediluvium, was to be used without delay, even before a medical officer could



visit him; and if there was coldness, chilliness, gastric irritation, &c., the patient was enveloped in sinapisms—to the epigastrium, cervical and lumbar spine, wrists and arms, legs and feet, &c. Immediately after, if the stomach were quiet, ten or fifteen grs. cal., and fifteen or twenty grs. of sulph. quinia; then cups were freely applied to the ligamentum nuchæ, lumbar region, epigastrium, and perhaps to the whole length of the spine. But if the stomach were irritable, previous to giving the quinia and calomel, and after the application of sinapisms, free cupping to the epigastrium, &c., was employed, and enemata of chlorid. sodium and water were used. If the stomach was not particularly irritable, in two hours after the first dose of calomel and quinia, a large dose of ol. ricini, or of ol. olivar. was given, followed at the proper time by a cathartic enema, so as to produce free evacuations as soon as possible. If the stomach was irritable, the oil was not given, but the enemata were repeated *pro re nata*—say every hour or two for a time—and of these none were more useful than the simple one of common table salt and water, assisting the medicine, and allaying gastric irritability beyond any enema I have ever employed. Whether the stomach were irritable or not, in three or four hours after the first dose of calomel and quinia, another was given, say five or ten grs. calomel, and ten or fifteen grs. quinia, according to the state of the case; and similar doses were given every four hours until free evacuations were procured, when the calomel was omitted, or continued, at discretion. Sometimes the calomel was continued in combination with quinia, in such doses as were deemed advisable, even to the second or third day, but not generally. Much depended upon circumstances. On account of the perturbing treatment of the first day, as well as the nervous irritation, restlessness, and anxiety of mind, always more or less on the first day, diminishing as the disease advances, one-quarter to one-half grain sulphate of morphia was generally added to the calomel and quinia at about the hour of tattoo, *hora somni*, or about nine o'clock P. M.; and it was not uncommon to give a dose of morphia at night until convalescence was established. It was not very uncommon to give morphia, quinia, and calomel together during the first day. This course, modified to suit the different cases, constituted the main treatment for the first part, or stage, of the disease.

The effect of the above remedies is easily seen. The baths and sinapisms equalize temperature and the circulation, and subdue gastric irritation. Cupping has the same effect in a powerful manner, and all have an action on the nervous system. It is also seen that importance is attached to the early and free evacuation of the bowels, and it was always the intention to procure five or six passages in as short a time as practicable after the first visit; for a decided action of this kind not only subdues the present irritation of the stomach, but (I am inclined to think) prevents nausea, retching, and vomiting at a later stage of the disease, when black vomit is so apt to supervene. For this object, calomel and oil are the best, the first being easily retained by the stomach, and the last (if retained) effectual.

The combination of calomel and quinia, besides being the surest and best cathartic, has a wide influence on the whole system. It acts upon the skin, the liver, the kidneys, the nervous system, and probably upon the blood. Many articles of the *materia medica* are enhanced in value and rendered more efficacious by combination; and this is especially true of calomel and quinia in most southern fevers, and in none more than in that scourge, yellow fever. General bleeding is not often necessary in yellow fever, unless there is a bounding pulse, great heat, &c., for the quinia lowers the pulse, diminishes the heat of skin, and brings the system to somewhat of a healthy standard in a surprisingly short period of time; and then the mercurial action takes effect, the chylipoietic viscera having been already thoroughly acted upon. The system is now in a condition to *respond* to the mercurial, being lowered to near the healthy standard; and I well remember to have read an interesting paper on the subject by Dr. Ansel W. Ives, of New York, published many years ago, which inculcates that the mercurial influence cannot be induced unless the system is in a condition somewhat analogous to health; that if the circulation, &c., be above the healthy standard, lowering measures are necessary; whereas, on the other hand, if the system be much below the standard of health, supporting measures are indicated. Furthermore, the mercurial influence (downright pyalism is not meant in all cases) prevents relapse, or secondary fever, so common in the more advanced stages of the disease, which is exceedingly dangerous. A recent writer on yellow fever, an American physician, name not recollected, admits that quinia will surely break up the first stage of the fever, but he says that relapses are frequent. Hence, in my opinion, the value of calomel with quinia; the combination prevents the secondary fever. It is essential that the treatment should commence early, within two, three, four, or five hours from the attack; the earlier the better. This mode of treatment, or a similar one, is termed, in New Orleans, the "abortive method."

Why should we commence this treatment early? For the best of reasons, *disorganization has not begun*. Dr. Fenner, of New Orleans, says:—

"In the early stage of yellow fever the derangement of the system is *entirely functional*, and consists chiefly in *lesion of innervation*. In the advanced stages it is altogether a different affair—*organic lesions have then taken place, and the blood is altered*."

Hence the necessity for early treatment, for the delay of a very few hours may lose the patient.

Many contend that mercurials act perniciously in yellow fever, by dissolving the fibrin of the blood. But the uninterrupted progress of the disease, for only a few hours, appears to me to have more effect in producing dissolution of the blood than any rational remedy could possibly have. We have a tremendous disease to deal with; and desperate diseases require vigorous remedies; in the language of the well-known aphorism—*Ad extremos morbos, extrema remedia exquisite optima*. I have never known a case of yellow

fever prove fatal after ptyalism, whether produced accidentally or intentionally. The ptyalism might have been very unpleasant, sometimes even causing one to regret that the remedy had been carried so far; but, after all, I have never known one of these cases to terminate fatally; a result which could scarcely be expected if mercury has such a powerful effect in producing a dissolved condition of the blood in yellow fever as has been represented. It will be recollected that Dr. Chisholm used the following impressive language:—

“Let it never be forgotten, that at whatever period of the disease salivation is excited, whether the supposed signs of putrefaction have appeared or not, the accession of it is the certain signal of cessation of disease, and of returning health.”

It is to be distinctly understood that I am no advocate of ptyalism, or the profuse administration of mercurials as practised in many parts of our country. But in so serious a disease as yellow fever, no particular pains is taken to avoid, or produce, salivation; the intention being to administer the remedy judiciously and efficiently so as to control the fever and procure free evacuations in the first stage. It appears to me that mercurials are powerful auxiliaries in the first stage of yellow fever; and it may appear that some of our physicians have discarded a valuable remedy on account of an imaginary evil.

A few other remedies may be noticed. As a general thing, venesection is not practised by the profession, unless in particular epidemics, or in particular cases. Much depends upon climate, season, constitution, &c. As a general rule, venesection is not proper; but when the constitution is robust, skin hot, pulse full, or bounding, and there is intense pain of the head, one free bleeding may be of great service, especially when immediately followed by a full dose of calomel and quinia, cups, sinapisms, &c., as before enumerated. General bleeding was never repeated at Vera Cruz. In May and June, 1847, weather hot and dry, the patients recently from the north, and robust, with hot skin, full pulse, and severe pains of the head and spine, one free venesection was found beneficial.

In the month of June, a quartermaster's clerk, of good constitution and habits, came to the hospital at nearly ten o'clock P. M., just as I was about leaving for the night, and told me that if he were not immediately relieved he should die, or become “crazy” before morning, and my own opinion coincided with his. He had been ill but a few hours: bounding pulse; hot and dry skin; eyes brilliant, suffused, and extremely tender on slight pressure; intense pain in the frontal and orbital regions; in fact, the case more resembled a sudden attack of phrenitis than any other disease. An arm was corded and a vein opened at once, but the blood did not flow to suit me; the other arm was, therefore, bound up, and a large incision made into the vein, from which the blood flowed *pleno rivo*, and the patient was soon bled *ad deliquium animi*. As soon as he was somewhat recovered from the syncope, twenty grains of

calomel, half grain of sulphate of morphia, and twenty-five grains of sulphate of quinia were given; then leeches were applied to the forehead, and cups to the epigastrium and whole length of the spine; at one o'clock, ten grains of calomel and fifteen grains of quinia were administered; and five grains of calomel and ten of quinia at sunrise next morning. Visited the patient before 8 A. M., found him better; but little fever; pulse soft; slight pain of the head, complains of buzzing, deafness, &c., signs of quinization; skin quite yellow. The medicine had operated freely as a cathartic. A modification of the same plan of treatment was continued through the day, and blisters were applied to the epigastrium and over the cervical spine. The patient was severely salivated; he was put on tonics, chicken broth, beef tea, wine, ale, &c., and was restored to perfect health.

Such, as above detailed, was the character of yellow fever in May and June, though few cases were so violent as this one; and hence the benefit derived from one free bleeding early in the first stage. By the time the fever was rife we had picked up several good men for hospital stewards, most of whom had the disease in May and June. These being our right-hand men, they were taken in charge by myself, and we had the satisfaction of seeing them recover. The attendants were also sick, but generally recovered. The reason of this success is obvious, no time was lost. Our worst and most unfortunate cases were those from the regimental hospitals, some two or three miles from the city.

One evening in May, as I was going the hospital round of duties, a division hospital steward, a Frenchman, begged me to assist him, as he felt very sick. He stated that the physician in charge of his division, an employed French resident, was absent; that he (the doctor) was very good in diarrhoea and dysentery; but that he did not seem to understand the treatment of such awful fevers as were prevalent, for ptisans did not answer, &c. The steward was fresh from the north, had a good constitution, temperate, pulse full, skin dry and hot, intense pain in the usual regions, &c. He was freely bled, and the usual plan pursued; but slight ptialism was induced; and in a reasonably short period of time he recovered, afterwards doing good service among the sick. He came out of Mexico with our army, in 1848.

About the first of July, the men having become reduced by sickness and the excessive heat in April, May, and June; the rainy season having set in, and the weather become cooler; the fever changed its type, and general bleeding was almost wholly abandoned.

Cathartics have already been sufficiently alluded to; and after the first free evacuations, they were scarcely ever employed. After the first free passages, cathartics and laxatives are generally improper, both on account of the rapid progress of the disease, and the tendency to irritation of the stomach; and to prevent and allay gastric irritation, and keep the bowels open, enemata are much the best. Of these we have a selection, terebinthinate, &c. &c.,

but a solution of common salt in water, was found to answer almost every purpose, and was much the most convenient in the immense hospital.

*Diuretics.*—Although the action of the kidneys is sadly deranged in yellow fever, this class of remedies is utterly worthless. In certain states of the system, especially in a miasmatic region, quinia is the most efficacious diuretic I have ever known; as in the Florida fevers of 1839, '40, and '41, when a scanty, high-coloured urine was often changed, in the course of one hour after the administration of quinia, into a profuse, pale, watery discharge, the pain in the spinal column being at the same time greatly alleviated, or entirely disappearing. In the miasmatic fevers of the south, quinia is the best diuretic that can be employed.

*Diaphoretics.*—These, as a class of remedies, are of little use, and the best is the quinia and calomel, with warm blankets. Although spacious apartments and free ventilation are essential, in no disease is it more necessary to guard against currents of air and sudden chills than in yellow fever; and it is better to keep the patient well covered with a blanket, or coverlet, even in summer, than to risk the least exposure. Indeed, patients are commonly quite comfortable under a thick blanket, even in hot weather; and in cold weather, or when the Vera Cruz northers came on, an abundance of bed-clothing was necessary. Baths and sinapisms have been mentioned; bottles of hot water, hot bricks, &c., were used as required. The diaphoretic most to be depended upon, however, is calomel and quinia. I have often seen a patient with full pulse, hot and dry skin, and intense pain of the head, after the first decided dose of this combination, and in the course of two or three hours, have a soft pulse, a moist and cool skin, and little or no pain of the head. In this state, the patient must be well covered, and carefully guarded from sudden chills.

Leeches were provided in abundance, and were used freely—applied to the temples, forehead, and epigastrium—but they are not essential; and cups to the cervical and lumbar spine, and to the epigastrium, will answer every purpose for which leeches are employed.

Ice was provided in abundance, and is highly praised; small pieces were often administered with advantage, but iced mucilage, given often and in small quantities at a time, was the best. For the intense pain of the head, I have never found ice of much use, and generally the pain was aggravated by its application; vinegar and water, or spirits and water, with a hot and dry forehead, answered much the best. Calomel and quinia, however, in a short time, do more to relieve the pain of the head and spine than any other remedies; often changing, in an hour or two, the intense pain into a dull aching, buzzing, or deafness, wholly different from the original pain. This change is principally due to the action of the quinia.

From the foregoing statement it appears that quinia is considered a main remedy in the first stage of yellow fever; but care is required that it be not carried too far. Some cases will tolerate the free use of it one day, some two

and even more days; but when the patient is fairly put under the quinia influence, it is best to gradually diminish the quantity; not too rapidly, however; for, if withdrawn suddenly, secondary fever may succeed, which always places the patient's life in jeopardy. We are also called to some cases in the second stage of the disease, in which large doses of quinia cannot be expected to prove beneficial, but must be avoided. There are some cases in which it can be pretty certainly predicted, from the commencement, that quinia will be of little use, as when all the symptoms are grave, with yellowness and cold surface, like very many cases in the malignant epidemic at St. Augustine, Florida, in 1841. These are always dangerous cases, however treated. When the skin is quite yellow on the first visit of the physician in the early stage, quinia is not apt to effect much, and the earlier in the disease the yellowness appears, the more dangerous; for there is reason to fear more or less disorganization, and the blood is changed. Much depends upon the circumstances of the case. Perhaps the best course in such cases is to give at first calomel, oil, and enemata, so as to move the bowels freely as soon as practicable, afterwards using mild means, as small doses of quinia, or quinia and calomel, ptisans, enemata, &c.; and it is to such cases that the French and Spanish (Mexican) treatment seems to be best adapted.

The administration of immense doses of quinia is not advisable, and it is my own opinion that twenty grains is nearly the maximum dose, for it certainly is as large a dose as can generally be given with advantage; and the sixty, eighty, and one hundred grain doses we hear of, if the patient is susceptible to any impression, or the article is a good one, must surely prove injurious, it may be said *poisonous*. Granting that such enormous doses are not poisonous, experience shows that fifteen or twenty grains will effect as much in southern fevers, as forty or sixty grains. In those cases which do not rapidly run to a fatal termination, ten and fifteen grains are as efficacious as larger doses, and are much less apt to produce unpleasant effects. At Vera Cruz, the dose of quinia varied from ten to twenty grains, and I rarely thought of exceeding the last-mentioned quantity. We are speaking of the pure and unadulterated sulphate of quinia, not of that which is "made to sell."

Quinia, then, is considered by many members of the profession a valuable remedy in yellow fever. In the *Transactions of the American Medical Association* for 1848, pp. 79, 80, the following remarks occur:—

"Concerning the treatment of yellow fever, we have not found much that is reliable. The recommendation of quinia, coming from New Orleans, last summer, and Dr. Nott's suggestions of creosote, require confirmation."

Dr. Harrison, of New Orleans, same volume, p. 108, says: "The epidemic did not differ from others, except in this: sulph. quiniæ was more liberally used than formerly, and generally with the best results, according to the information I have been able to obtain from those in whom I have confidence."

The New Orleans physicians are generally in favour of the free employment of quinia in the first stage of yellow fever. My own testimony is decidedly in its favour, having freely used it in large doses in all southern fevers since 1839; and in yellow fever, in 1841, during the epidemic at St. Augustine, Florida; Vera Cruz, in 1847; Pascagoula, Miss., at the large encampment, 1848; and never with more satisfaction than in the recent severe epidemic (1852) on Sullivan's Island, in Charleston Harbour, S. C.

Dr. Stevens says that the French physicians of Martinique commenced giving the sulphate of quinia in yellow fever, with considerable success, as far back as the year 1823.

"The sulphate of quinia, like all the other alkaline salts, reddens the blood, out of the body; but it possesses this power in a much inferior degree to the muriate or carbonate of soda, the nitrate, the chlorate, or the carbonate of potass. The sulphate of quinia has been long used, both by myself and others, in the islands of St. Thomas, St. Croix, &c., and we have found it a useful remedy; but we could only trust to it during the convalescence."—STEVENS *On the Blood*, p. 394.

The practice in the West Indies with this article was entirely during convalescence, whereas the physicians of the United States employ it freely in the very first stage. Even on the principles of Dr. Stevens, sulphate of quinia is a valuable remedy; but, if useful after the blood has become dissolved, why not commence the treatment early, while the blood is rapidly going into a state of dissolution, not yet, however, in a state of dissolution?

Hillary, one hundred years ago, in his work on the *Diseases in the Island of Barbadoes*, would have rejoiced at the discovery of the sulphate of quinia.

"In these circumstances (the change about the third day) the cortex Peruv. may be thought to be the best, and most likely medicine to succeed: I grant that its well-known efficacy, in preventing or putting a stop to mortification, promises much; but the misfortune is, that this drug is so disagreeable to most palates, and the stomachs of the sick in this disease are so much affected, and so weak, and so subject to reject everything, even the most pleasant and innocent, that they can very rarely take it in any shape, and still much fewer can retain it when they have got it down; so that no stress or dependence can be laid on it; and the only way that I could get a patient to take and retain two doses of the bark in this case, was the extract of it, with a spoonful or two of milk and water, and even thus they could not retain a third dose of it; wherefore, I soon laid aside all future attempts to give it, foreseeing that it would be in vain, and that we should thereby only lose time, not to be recovered, and our patients also, when we might probably save them by another method; and I am told that several others have tried to give the bark in this case, but with no better success."—Pp. 119, 120.

Again, p. 120:—

"The radix serpentaria Virginiana is the next best antiseptic," &c. &c. "Sat easily on the stomach, moderately raised the pulse and fever, which were now sunk too low," &c.

When cupping and sinapisms have done their work, and the transition from excitement to exhaustion is about to commence, or has commenced, epispasties must be freely employed, and they may be used quite early in the disease after sinapisms and free cupping. A large blister to the epigastrium

is almost always necessary, this and the cervical spine being the two most important points; indeed, were it not so very inconvenient to the patient, the whole line of the spine ought to be blistered, and in bad cases it is sometimes essential.

The irritability and irritation of the stomach is the great obstacle to successful treatment, from the beginning to the end of the disease. It is of the utmost importance to quiet the stomach as soon as possible, but the subject has been already alluded to. Even when black vomit has come on, we must not cease our exertions; and two articles have been much praised—ol. terebinth. and ereosote. As a general thing, I have not found them of great service in the gastric irritability, and after black vomit has commenced, they are worthless. Indeed, how can they be expected to prove beneficial? for disorganization has taken place, the inner coat of the stomach being, at various points, excoriated, inflamed, softened, and ulcerated. In this condition of the stomach, may not these remedies sometimes prove injurious?

In the second stage, which may commence on the second or third day from the attack, after quinia and its combinations have done their best; pulse soft, frequent, or nearly natural; heat abated; skin soft, nearly natural, or more or less clammy; yellowness, &c.; and when it is uncertain if the black vomit will come on or not, an expectant method of treatment is proper. In this state of things, mucilages, arrowroot, sago, animal jelly, chicken broth, beef-tea, wine, ale, &c., in small quantity, and even brandy when the patient prefers it, may be given; for it is to be recollected that nothing is gained by forcing these things on the patient when they are disagreeable to him. Even after the first twenty-four hours, if the patient can be prevailed upon to take a spoonful of nice chicken broth, or beef-tea, or any other little nourishment he may fancy, every two or three hours, it may be of great importance, for the starvation principle in fevers is now pretty well exploded. Let the patient take what is most agreeable, provided it is not obviously improper.

In this weakened state, preceeding and including convalescence, great caution is necessary, and but little medicine is required—as very moderate doses of quinia, small quantities of the infusion of serpentaria Virginiana, enemata, &c.; and, in this stage, the following combination has been found exceedingly useful: Mist. camph. (or julep), mist. aumon. carb., āā ʒj; vel ʒij; which may be given every one, two, or three hours, according to circumstances. There is no doubt about the usefulness of this prescription, and of the virtues of carbonate of ammonia in the later stages of yellow fever, which may be accounted for on general principles; but the carbonate of ammonia may act in the way pointed out by Dr. Stevens, on the blood, being a “non-purgative neutral salt, an alkaline carbonate.”—STEVENS, pp. 300, 324, 328. Whatever may be the theory, the facts are certain.

Baron Humboldt speaks of several methods of treatment in yellow fever: *les système de Brown; l'usage du quinquina; les saignées recommandées avec tant chaleur par Rush; les préparations mercurielles, surtout le calomel ou*



*muriate de mercure doux, associé ou jalap*; the ancient treatment *des morceaux de neige*; and, finally, of the Mexican mode of treatment, as follows:—

“On a regardé, pendant quelque temps, à Vera Cruz, les sorbets, le jus d'ananas (*xugo de pina*), et l'infusion du *palo mulato*, vegetal du genre amyris, comme des remèdes spécifiques contre le vomito; mais une longue et triste expérience a décrédité peu-à-peu ces remèdes, même chez le peuple Mexicain.”

The Mexican, Spanish, and French method of treating yellow fever in Vera Cruz is entirely with olive oil and lemon-juice, and the infusion and decoction of the *palo mulato*, as stated by Don Manuel de Viya, before quoted:—

“El remedio mas eficaz que se ha conocido por la esperiencia, es el uso del limon y del aceite. Tambien el palo mulato. Nada de sangrias, que se acostumbra en Jamaica y en las Antillas.”

A drink made from the *palo mulato* is not disagreeable, and I used it pretty freely with my patients. It is mucilaginous, a little astringent, and perhaps slightly tonic. The Mexican and foreign physicians of Vera Cruz relied entirely on olive oil and lemon-juice, and infusion or decoction of *palo mulato*, but with no great success; for the vomito attacked the Europeans earlier in the season than it did the Americans, and deaths were numerous among them (Europeans) in all parts of the city before we had a case in the general hospital. Indeed, the Mexicans considered us under the special care of Providence during the year. The before-mentioned treatment is universal in Mexico, Havana, and other parts of the world; and, if certain to cure, or to cure as many as any other mode of treatment, it is best to follow it, for it is convenient, and much less troublesome than any other method. I gave the oils and lemon-juice freely, and came to the conclusion that the oil was best without the lemon-juice; but I never dared trust our robust Americans exclusively to this treatment. Why is it that one kind of treatment seems to answer with one people and not with another? It appears to me that Baron Humboldt accounts for the difference in the most satisfactory manner:—

“Les régions équinoxiales de l'Amérique n'étaient visitées que par des Espagnols et des Portugais, deux peuples de l'Europe australe moins exposés, par leur constitution, à sentir les effets funestes d'un climat excessivement chaud, que les Anglais, les Danois, et d'autres habitans de l'Europe boréale qui fréquentent aujourd'hui les îles Antilles.”

And it certainly seems that a native of Spain, Portugal, France, or Italy may recover from yellow fever under mild treatment, which would by no means answer for a native of Great Britain, Ireland, Denmark, Sweden, or Russia.

Diarrhœa and dysentery were prevalent, ran rapidly into the chronic form, and were very fatal. Brantz Mayer says that diarrhœa, dysentery, and vomito are the most fatal maladies at Vera Cruz. Their consideration will be reserved for the great encampment at Pascagoula, in 1848, when hundreds of these cases were brought from Mexico.

*Eruptive Diseases—Rubeola and Variola.*—These are always troublesome to the military surgeon with new levies. The Texans had measles severely at Monterey. Variola was brought to Lobos Island, when our army was en

route to Vera Cruz, by two transports filled with volunteers, who had to be cut off from intercourse with the rest of the troops; scattering cases of the disease occurred at Vera Cruz in the summer of 1847; and in the first part of 1848 it was necessary to establish a smallpox hospital without the walls of the city.

Variola was introduced into Mexico, according to Humboldt, in the year 1520,<sup>1</sup> and made terrible ravages in 1763 and 1779; the epidemic of 1797 was much less fatal, owing to the general practice of inoculation. Of 6,800 persons inoculated at Valladolid, in the bishopric of Mechoacan, according to Humboldt, only 170 died, being exactly 2.5 per cent. In 1804, vaccination was introduced. Humboldt says that the genuine vaccina is found among the cows of Mexico: "*M. Valmis l'a decouvert dans les environs de Valladolid et dans le village d'Atlixco, près de la Puebla, aux pis des vaches Mexicaines.*" The ships of the Spanish royal navy carried this boon to mankind to all the American and Asiatic colonies; in the beautiful language of Humboldt: "The Indies, for the first time, saw these fleets, with instruments of carnage and death, bear to suffering humanity the germ of relief and consolation." And this blessing is to be taken from us! It will require an immense accumulation of facts, more than the world ever saw, to shake our faith in the protective influence of vaccination.

This disease would scarcely have been noticed, but for the strong Gregorian doctrines which seem to be creeping into notice, so much so as to shake the belief of many in the safety of vaccination; and the occasion permits me to give my humble testimony in favour of vaccination.

A few facts may not be out of place. In the early part of 1842, at Fort Adams, R. I., a mulatto servant of the officers' mess, who had not been vaccinated, caught smallpox while on a visit, of a few days, in Providence, in the same State. There had not been a single case of the disease near the fort, nor in the city of Newport, about three miles distant. This man attended the breakfast-table on the day of the attack, afterwards put our rooms in order, and just before the hour of dinner I was called to visit him. He remained in his room, by the officers, until the eruption appeared, many persons having been exposed in the mean time; and on the appearance of the eruption he was removed into a retired room in one angle of the fort. To the time of the eruption, fifteen or twenty persons must have been exposed to the contagion. On the occurrence of this case, revaccination was immediately resorted to in all persons, but without the slightest effect. No other case occurred. One officer informed me that he had been vaccinated but once, when young, more than forty years before; revaccinated, but without effect. There was in the hospital at this time a soldier who had been injured, but now nearly well; native of some German city, twenty-five to twenty-eight

<sup>1</sup> Bernal Diaz states it was introduced into Mexico by the Spaniards under Narvaez, about the year 1520, or 1521. *Y como venimos en aquel tiempo con cortés, y dende á diez meses vino Narvaez, y truxo un negro lleno de viruelas; el qual las pegó á todos los Indios que habia en un pueblo, que se decia Cempoala, é desde aquel pueblo cundió toda la Nueva-España, é ovo grande pestilencia.* P.

years of age, vaccinated when about two years old. It appears that the laws of his city are stringent on this subject, every child having to be officially vaccinated, and then the patient is furnished with a printed certificate of the vaccinating physician, and of the mayor, with the seal of the city attached; so that in this case there could be no doubt of the truth of the man's statement. Would that such laws could be enforced in our own country! I proposed to this man that we should go to the bedside of the patient and be inoculated with the variolous matter, to which proposition he agreed, and I first inoculated myself in both arms, and then the man in both arms. Not the slightest irritation appeared, every puncture healing as readily as the scratch of a pin. I was vaccinated fifteen years before.

In the summer of 1847, a case of smallpox suddenly appeared in the hospital of the quartermaster's men, at Vera Cruz. No new patients were admitted, but every inmate having been already exposed to contagion, it was determined to let everything remain in *statu quo*, and to guard against contingencies. Nearly all of these men (most of them having been soldiers) had been vaccinated; the patient had not been vaccinated. Vaccination and revaccination were immediately resorted to, and several of the men were inoculated from the pustules of the patient, but without effect; for in not a single instance of revaccination, or inoculation, was there the least local irritation. I inoculated myself in both arms; no local irritation whatever. Not a single case of variola, or varioloid, occurred among these men, the only patient being the solitary one first attacked.

In the army of the United States the regulation is positive, and strictly enforced:—

“When a recruit joins a regiment, post, garrison, station, or dépôt, the surgeon will forthwith ascertain whether he has had variolous, or vaccine infection, and if he has not, will see that he be vaccinated as soon as practicable; and for this purpose he will constantly keep good matter on hand, making application to the Surgeon-General for a fresh supply as often as may be necessary.”—*Regulations for Medical Department*, par. 84.

No army regulation is more strictly observed than this; every recruit is vaccinated as soon as sent to a dépôt; on joining his regiment, post, garrison, or station, he is again examined with reference to this very subject. In the whole course of my service in the regular regiments of the army, from the extreme north to the tropics, I have never seen a case of variola, or varioloid, in man, woman, or child; and the only cases of the disease I have ever seen were among irregular troops, and persons over whom we had no control. I have revaccinated scores and hundreds of persons without producing the least effect, not even local irritation. As the question stands, shall we discard vaccination and return to inoculation? To which my reply would be: *By no means*. I can think of but one circumstance which could induce a resort to the practice of inoculation, the misfortune of being on duty with troops when smallpox had broken out, without a supply of good vaccine matter; in which event I would inoculate without scruple, but would very much regret the

necessity. Under the system of prompt vaccination, however, such a thing can hardly occur in our service.

Dr. George Gregory says of variola: "The increase is attributable to the extensive diffusion of vaccination." Again: "Vaccination had failed in establishing in the mind a confident feeling of security; it must be viewed as a beneficent provision of Nature, not for the extermination, but for the mitigation of smallpox." In regard to one point, "establishing in the mind a confident feeling of security," we must dissent from the conclusion of Dr. Gregory. On the contrary, there is a universal "confident feeling of security" in vaccination, from the highest to the lowest; in Great Britain, the Queen and the responsible advisers of the crown; in the United States, from the President to the elodhopper; and this "feeling of security" after vaccination is based on the medical experience of more than half a century, and on the tradition of the masses, tradition being often the best of evidence, for "fathers are not used to lie to their own children." There is a universal confidence in vaccination. In our own little experience, we have often known an Irish mother, pitted and marred with smallpox, lead her child to us, begging, "for the love of God," that it might be vaccinated. The confidence in vaccination is universal, and it will require mountains of facts to diminish it.

Dr. Copland seems to think that "the middle of the nineteenth century finds the majority of the profession in all latitudes and hemispheres doubtful as to the preponderance of advantages, present and prospective, to be obtained either from inoculation or from vaccination." Dr. Gregory says that vaccination is only a mitigation of smallpox. Granted. One hundred years ago, fifty years ago, this "*mitigation*" would have been considered a boon to mankind, all that could have been wished, all that would have been asked. In the present day, would not a *mitigating* agent, as quick and as efficacious in its action as vaccination for smallpox, in cholera, typhus fever, or yellow fever, be regarded as inestimable? Smallpox is so much *mitigated*, to use no stronger expression, as to be divested of its terrors; and I have never seen a case of variola, or varioloid, in any person who has been vaccinated, though they doubtless do occur. As Mr. Grainger says: "It is not the failure, but the neglect of vaccination which is the true cause of the mortality;" and this is especially true of England, Ireland, and the United States. In our own country the universal neglect of vaccination is deplorable. Vaccination ought to be universal; and "great stress is laid on the manner in which the operation is performed; on the importance of fresh and efficient lymph; and on the careful watching of each case—precautions which it is certain are but too often neglected." \* \* \* "Not one need have perished, so far as smallpox was concerned, if only that great remedy, provided as it were by the hand of God himself, had been applied."—*Amer. Med. Journ.* July, 1852, pp. 228-234: *On Inoculation and Vaccination*, By Jesse Young, M. D. *Amer. Journ.* Oct. 1852, p. 381.

*Medical Statistics of Vera Cruz.*—In relation to the mortality of yellow

fever, Waddy Thompson says: "According to the estimates of those most entitled to confidence, less than five per cent. of those attacked die." This is surely a great mistake. In 1847, the French, Mexican, and Spanish physicians lost many patients, the fever attacking European foreigners earlier in the season than the Americans, and there were many interments before our troops were attacked. Dr. De la Puente, of Vera Cruz, informed me that he had known fifty per cent., and even seventy-five per cent. of the patients in the Mexican Military Hospital die; and from all the information which could be obtained before fever commenced, I decided in my own mind that if less than fifty per cent. of the yellow fever patients died, it would be as favourable a result as might reasonably be expected. Brantz Mayer gives an interesting paper:—

1841.		
Total population	.	6,500
Whole number of deaths	.	1,017
Mortality per cent.	.	15.64

  

Diseases.	Number of deaths.	Mortality per cent. of the whole population.
Vomito	155	2.38
Fevers <sup>1</sup>	142	2.18
Diarrhoea and phthisis <sup>2</sup>	212	3.26
Dysentery	29	0.44
Variola	142	2.18
All others	337	5.18
	<hr/> 1,017	<hr/> 15.64

Mortality from zymotic diseases, including phthisis, 10.46 per cent. of the whole population.

"Thus, allowing the population of Vera Cruz to be about 6,500 (which I consider quite liberal), you will perceive that one-sixth of the whole died in the course of the year; of this, one-sixth—about an equal proportion—perished from *vomito*. The excess of burials over baptisms is 563. Diarrhoea, dysentery, and vomito are the most fatal maladies. In 1842, I am told, that near 2,000 died of vomito in Vera Cruz. This, however, was owing to the number of raw troops sent there from the interior, to be embarked for Yucatan."

Humboldt gives us the following statistics: Hospital de San Juan de Dios, admitted from 1786 to 1802, 27,922 patients; died, 5,657; mortality per cent. 20.22. In great epidemics, the mortality amounts to 30 or 35 per cent. Hospital Loreto, from 1793 to 1802, 2,820 patients; 389 deaths; a mortality of 13.79 per cent. The best managed hospital, the little San Sebastian, in 1803, admitted 553 patients; discharged, 473; died, 78; mortality per cent. 14.10: yellow fever, 428; cured, 360; died, 69; mortality per cent. 16.12. In the Royal Military Hospital, including sailors of the royal navy, from 1792 to 1802, the mortality varied from 2.43 to 11.70 per cent. per annum; the average being 6.23 per cent. In 1806, Hospital San Carlos had a mortality of only 1.33 per cent., while San Sebastian had a mortality of 13.98 per cent., and Loreto had a mortality of 17.44 per cent.

<sup>1</sup> Fevers other than yellow fever, it is presumed.

<sup>2</sup> No one can tell why diarrhoea and phthisis are put together.

*Statistics of the General Hospital of Vera Cruz, U. S. Army, from April 1, 1847, to March 31, 1848, one year.*

Abstract of the report of sick and wounded, made to the Surgeon-General, for the quarter ending June 30, 1847:—

<i>Regulars.</i> —Number of cases	1,310
“ “ of fever	234
“ “ yellow fever	112
“ “ diarrhoea and dysentery	482

Mortality—Total number	156
“ all fevers	26
“ yellow fever	14
“ diarrhoea and dysentery	84

Mortality per cent.	11.45
“ “ all fevers	11.11
“ “ yellow fever	12.50
“ “ diarrhoea and dysentery	17.42

Discharged for disability	0.46
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<i>Volunteers.</i> —Number of cases	860
“ “ of all fevers	178
“ “ yellow fever	14
“ “ diarrhoea and dysentery	347

Mortality—Total number	73
“ “ from all fevers	9
“ “ yellow fever	4
“ “ diarrhoea and dysentery	33

Mortality per cent.	8.48
“ “ all fevers	5.05
“ “ yellow fever	28.57
“ “ diarrhoea and dysentery	9.51

Discharged for disability	12.67
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*Quartermaster's men, sailors, &c.*

Whole number of cases	144
“ “ all fevers	86
“ “ yellow fever	52
“ “ diarrhoea and dysentery	40

Total mortality	30
Mortality from all fevers	18
“ “ yellow fever	13
“ “ diarrhoea and dysentery	7

Mortality per cent.	20.83
“ “ from all fevers	20.93
“ “ yellow fever	25.00
“ “ diarrhoea and dysentery	17.50

Consolidated report of regulars, volunteers, quartermaster's men, &c., for the quarter.

Mortality per cent.	10.93
“ “ from all fevers	10.64
“ “ yellow fever	17.41
“ “ diarrhoea and dysentery	14.27

Abstract of the report for the quarter ending 30th of September, 1847.

<i>Regulars.</i> —Number of cases						629
"	"	of all fevers	.	.	.	163
"	"	yellow fever	.	.	.	72
"	"	diarrhoea and dysentery	.	.	.	179
Total mortality		.	.	.	.	132
"	"	from all fevers	.	.	.	43
"	"	yellow fever	.	.	.	34
"	"	diarrhoea and dysentery	.	.	.	55
Mortality per cent.		.	.	.	.	20.98
"	"	of all fevers	.	.	.	26.38
"	"	yellow fever	.	.	.	47.22
"	"	diarrhoea and dysentery	.	.	.	30.72
<i>Volunteers.</i> —Number of cases		.	.	.	.	554
"	"	of all fevers	.	.	.	271
"	"	yellow fever	.	.	.	52
"	"	diarrhoea and dysentery	.	.	.	138
Total mortality		.	.	.	.	36
"	"	from all fevers	.	.	.	20
"	"	yellow fever	.	.	.	16
"	"	diarrhoea and dysentery	.	.	.	12
Mortality per cent.		.	.	.	.	6.49
"	"	of all fevers	.	.	.	7.38
"	"	yellow fever	.	.	.	30.76
"	"	diarrhoea and dysentery	.	.	.	8.69
<i>Quartermaster's men, sailors, &amp;c.</i>						
Total number of cases		.	.	.	.	377
"	"	of all fevers	.	.	.	217
"	"	yellow fever	.	.	.	100
"	"	diarrhoea and dysentery	.	.	.	69
Mortality		.	.	.	.	40
"	"	of all fevers	.	.	.	31
"	"	yellow fever	.	.	.	28
"	"	diarrhoea and dysentery	.	.	.	8
Mortality per cent.		.	.	.	.	10.61
"	"	from all fevers	.	.	.	14.28
"	"	yellow fever	.	.	.	23.00
"	"	diarrhoea and dysentery	.	.	.	11.59

Consolidated report of regulars, volunteers, quartermaster's men, &c., for the quarter.

Mortality per cent.		.	.	.	.	13.33
"	"	from all fevers	.	.	.	14.43
"	"	yellow fever	.	.	.	34.82
"	"	diarrhoea and dysentery	.	.	.	19.43

Abstract for six months, commencing April 1, and ending September 30, 1847.

<i>Regulars.</i> —Number of cases		.	.	.	.	1,939
"	"	of all fevers	.	.	.	397
"	"	yellow fever	.	.	.	184
"	"	diarrhoea and dysentery	.	.	.	661

Total mortality	.	.	.	.	.	.	282
“	from all fevers	.	.	.	.	.	69
“	yellow fever	.	.	.	.	.	48
“	diarrhœa and dysentery	.	.	.	.	.	139
Mortality per cent.	.	.	.	.	.	.	14.54
“	“	from all fevers	.	.	.	.	17.38
“	“	yellow fever	.	.	.	.	26.08
“	“	diarrhœa and dysentery	.	.	.	.	21.02
<i>Volunteers.</i> —Number of cases	.	.	.	.	.	.	1,414
“	“	of all fevers	.	.	.	.	449
“	“	yellow fever	.	.	.	.	66
“	“	diarrhœa and dysentery	.	.	.	.	485
Mortality—whole number	.	.	.	.	.	.	109
“	in all fevers	.	.	.	.	.	29
“	yellow fever	.	.	.	.	.	20
“	diarrhœa and dysentery	.	.	.	.	.	45
Mortality per cent.	.	.	.	.	.	.	7.70
“	“	from all fevers	.	.	.	.	6.46
“	“	yellow fever	.	.	.	.	30.30
“	“	diarrhœa and dysentery	.	.	.	.	9.27
<i>Quartermaster's hands, of all kinds.</i> —							
Total number of cases	.	.	.	.	.	.	521
“	“	of all fevers	.	.	.	.	303
“	“	yellow fever	.	.	.	.	152
“	“	diarrhœa and dysentery	.	.	.	.	109
Mortality—number	.	.	.	.	.	.	70
“	from all fevers	.	.	.	.	.	49
“	yellow fever	.	.	.	.	.	41
“	diarrhœa and dysentery	.	.	.	.	.	15
Mortality per cent.	.	.	.	.	.	.	13.24
“	“	from all fevers	.	.	.	.	16.17
“	“	yellow fever	.	.	.	.	26.97
“	“	diarrhœa and dysentery	.	.	.	.	13.76

Summary for six months, regulars, volunteers, and quartermaster's labourers.

Total number of cases	.	.	.	.	.	.	3,874
“	“	of all fevers	.	.	.	.	1,149
“	“	yellow fever	.	.	.	.	402
“	“	diarrhœa and dysentery	.	.	.	.	1,255
Mortality—number	.	.	.	.	.	.	461
“	from all fevers	.	.	.	.	.	147
“	yellow fever	.	.	.	.	.	109
“	diarrhœa and dysentery	.	.	.	.	.	199
Mortality per cent.	.	.	.	.	.	.	11.90
“	“	from all fevers	.	.	.	.	12.80
“	“	yellow fever	.	.	.	.	27.11
“	“	diarrhœa and dysentery	.	.	.	.	15.85

With these tables ends the yellow fever of 1847, the mortality being 27.11 per cent., as above stated; for there were so few cases in the next quarter (ten) as not to affect the results. No comparison can be made between the



regular troops and volunteers, for in the quarter ending with June, the twelve months men were rapidly discharged for disability, and they were all sent to the United States in a body, for discharge, before yellow fever became severe. In the quarter ending with September, the so-termed regulars belonged almost entirely to the newly raised ten regiments, and were in reality raw recruits.

Abstract of the report of sick for the quarter ending December 31, 1847.

<i>Regulars.</i> —Number of cases		652
“	“ of all fevers	116
“	“ yellow fever	3
“	“ diarrhoea and dysentery	195
Mortality—number		79
“	“ from all fevers	10
“	“ yellow fever	2
“	“ diarrhoea and dysentery	59
Mortality per cent.		12.11
“	“ from all fevers	8.62
“	“ yellow fever	66.66
“	“ diarrhoea and dysentery	30.25
<i>Volunteers.</i> —Number of cases		1,041
“	“ of all fevers	328
“	“ yellow fever	7
“	“ diarrhoea and dysentery	292
Mortality—number		113
“	“ from all fevers	23
“	“ yellow fever	5
“	“ diarrhoea and dysentery	63
Mortality per cent.		10.85
“	“ from all fevers	7.01
“	“ yellow fever	71.42
“	“ diarrhoea and dysentery	21.57

Report for quarter ending March 31, 1848.

<i>Regulars.</i> —Number of cases		539
“	“ of all fevers	55
“	“ yellow fever <sup>1</sup>	6
“	“ eruptive “	39
“	“ diarrhoea and dysentery	170

<sup>1</sup> Six cases among the regulars in the month of March; among the volunteers three cases, one in January, one in February, and one in March. It appears that cases of yellow fever, more or less, occur among strangers during every month in the year. In February, 1848, I was called to visit a young Mexican woman, from Jalapa, married to an American, just arrived, with her husband and brother, in Vera Cruz. The brother and sister had never been in the city before, and had never seen the ocean. Both the brother and herself, residing in different families, were taken with malignant yellow fever on the first day of February. The brother was attended by a Spanish physician, and died during the severe illness of the sister, the result of his case being carefully concealed from her. My patient had a malignant form of the disease, and was treated on the plan before stated; in the first stage, calomel and quinia, the quinia being given freely, olive oil and lemon-juice, cupping, &c.; and when the case

Mortality—number . . . . .	67
“ from all fevers . . . . .	9
“ yellow fever . . . . .	4
“ eruptive “ . . . . .	1
“ diarrhoea and dysentery . . . . .	47
Mortality per cent. . . . .	12.43
“ “ from all fevers . . . . .	16.36
“ “ yellow fever . . . . .	66.66
“ “ eruptive “ . . . . .	2.56
“ “ diarrhoea and dysentery . . . . .	27.64
<i>Volunteers.</i> —Number of cases . . . . .	360
“ “ of all fevers . . . . .	53
“ “ yellow fever . . . . .	3
“ “ eruptive “ . . . . .	11
“ “ diarrhoea and dysentery . . . . .	114
Mortality—number . . . . .	55
“ from all fevers . . . . .	7
“ yellow fever . . . . .	2
“ eruptive “ . . . . .	3
“ diarrhoea and dysentery . . . . .	33
Mortality per cent. . . . .	15.27
“ “ from all fevers . . . . .	13.20
“ “ yellow fever . . . . .	66.66
“ “ eruptive “ . . . . .	27.27
“ “ diarrhoea and dysentery . . . . .	28.94

Summary for one year, commencing April 1, 1847, and ending March 31, 1848.

Number of cases . . . . .	6,466
“ “ of all fevers . . . . .	1,701
“ “ yellow fever . . . . .	421
“ “ diarrhoea and dysentery . . . . .	2,026
Mortality—total . . . . .	775
“ from all fevers . . . . .	196
“ yellow fever . . . . .	122
“ diarrhoea and dysentery . . . . .	401
Mortality per cent. . . . .	11.98
“ “ from all fevers . . . . .	11.52
“ “ yellow fever . . . . .	28.97
“ “ diarrhoea and dysentery . . . . .	19.79

was more advanced, blisters were applied to the cervical spine and epigastrium. February 8, the eighth day from the attack, I was obliged to leave Vera Cruz, and gave some general directions for the management of the patient; small doses of quinia, the infusion of palo mulato (before spoken of), enemata, small quantities of chicken-broth and beef-tea—above all, to send for another physician. The hostess was a capital nurse in yellow fever; and I afterwards understood that my advice was carefully followed, except to send for another physician, and the patient recovered. The Mexicans from the *tierra templada* appear to be more liable to yellow fever in Vera Cruz than the Americans, even those from the most northern State. Vera Cruz is a terror to the inhabitants of the interior. But what cannot a rigid police effect! Yellow Fever prevailed to a great extent in Charleston, New Orleans, and other southern cities, in 1852; Vera Cruz was in a better state of sanitary police than any city of North America, and consequently suffered less from yellow fever.

It is curious to observe the result of the numerical method in medicine. The real endemic, which ended by the 30th of September, shows a mortality of 27.11 per cent., but a few scattering cases and deaths (19 cases and 14 deaths) during the succeeding six months, augments the mortality for the year to 28.97 per cent., an increase of almost 2 per cent. per annum. Suppose a physician were to have but one case of yellow fever, what would be the consequence? If the patient recovers, the cures will be 100 per cent., almost equal to what some physicians boast of; but if the patient should unfortunately die, the mortality will be 100 per cent. The mortality from bowel affections is truly frightful. These complaints are much more formidable than even the yellow fever, and for this reason: Yellow fever is soon over, for recovery or death, soon takes place, under the eye of the physician; whereas, diarrhoea and dysentery may continue for a long time, weeks, months, and even years, the physician loses sight of the patient, and he at last dies of the original disease. The history of hundreds, officers and men, who came out of Mexico, tells the story. A patient with yellow fever may pretty certainly be said to have recovered, but diarrhoea and dysentery can never, in a tropical climate, be pronounced cured. Hence, the statistics of southern diarrhoea and dysentery (the chronic form is spoken of throughout) are of no great value.

It is to be distinctly understood that I had little or nothing to do with the hospital in the first quarter of 1848. But two medical men from New Orleans were eternally "harping on my daughter"—the Charity Hospital of that city; and it is for the purpose of comparison that the statistics of the Vera Cruz General Hospital for an entire year are so desirable. The mortality for one year at the Hospital San Francisco, Vera Cruz, was 11.98 per cent.; the mortality of the Charity Hospital, New Orleans, according to the able paper of Dr. Simonds, from 1839 to 1850, inclusive, varied from 9.3 per cent. to 27.2 per cent., the average mortality being 15.44 per cent. per annum.<sup>1</sup> The mortality from yellow fever in the Vera Cruz General Hospital was 28.97 per cent. for the year. Dr. Simonds says: "The records of the Charity Hospital give as the average mortality from yellow fever, during twenty-five years, 44.27 per cent., or 1 in 2 $\frac{1}{4}$ ." Mortality from yellow fever in 1847, 36.1 per cent. Mortality per cent. in 1847, 17.8.

Causes of the large mortality of 1847, in the Vera Cruz General Hospital.

1. Our troops were strangers to the climate. It is the same, probably,

<sup>1</sup> "The average mortality, from all diseases, in the Charity Hospital, during twenty-six years, from 1825 to 1850, is 16.45 per cent., or 1 in 6."—SIMONDS, *Charleston Med. Journ.* September, 1851, p. 704. By the same paper it appears that, from 1825 to 1850, there were but four years in which the mortality was less than in the Vera Cruz Hospital—1831, 1845, 1846, 1850—the mortality per cent. in those years being respectively 11.49, 9.3, 10.8, and 9.98. That of Vera Cruz is 11.98 per cent. I speak of the General Hospital.

with the great majority of the patients admitted into the New Orleans Charity Hospital.

2. The immense size of the hospital. The larger the hospital the greater the mortality, for obvious reasons. The most successful hospital, in our humble opinion, is one which can be managed by one medical officer, or at most with one or two good assistants. Perhaps the Charity Hospital resembles ours in this respect.

3. Incompetent physicians. This was a serious evil. Immediately after the battle of Cerro Gordo, April 18, every military surgeon and assistant-surgeon was ordered up to assist the wounded, with the exception of Assistant-Surgeon Laub (medical purveyor, and in charge of the First Infantry Hospital) and myself, and employed physicians had to be substituted; and such medical men as some of them were! Our limits will not permit of more than an allusion to some of these beautiful specimens of a learned profession. About the 1st of July several very good employed physicians arrived from New Orleans, but we continued to be more or less embarrassed by these pests to the close of the season. The Charity Hospital has no such difficulties to contend with; for, since I have known anything of the institution, its medical staff has been capable, efficient, and meritorious.

4. Incompetent, dishonest, and disabled hospital stewards. When the army advanced on Cerro Gordo, in April, the general of division in the immediate command of Vera Cruz, on his departure, took with him every able-bodied steward, cook, and attendant, leaving only invalids and broken-down men for the duties. Not a single healthy steward, ward-master, cook, or nurse was left. It is true that good ones were afterwards picked up, here and there, but this was a work of time. Can the Charity Hospital say as much? It is well known that honest, faithful, sober, and efficient hospital stewards are the right arm of the military surgeon, and it is the misfortune of our service that we have too few of them.

5. Bad cooks and nurses. Worthless and drunken men were easily enough found for these duties; but are they proper assistants in a hospital? A better set of men than these was ultimately found, but it had to be a work of time. We had none of the Sisters of Charity in our recently-formed institution; but, at best, the nurse was a rough, hard-handed soldier.

6. We had nothing to commence with except sick men, who came in daily by scores and hundreds.

7. Moribund patients. These were admitted in numbers, the patients often dying in four or five hours, even in one hour, after entering the hospital. It is wrong to impugn men's motives, but it really did appear to me that, sometimes, yellow fever patients were sent to our hospital to die. But there was no help for it, as a general hospital must receive every one, and if the dead and dying were brought, they had to be received. Even if the patient were not moribund on admission, so much time had often been lost as to render his situation hopeless; for it will be recollected that yellow fever must

be brought at once under treatment, and the delay of a very few hours may seal the fate of the case. This delay, and these moribund cases, swelled the mortality at Vera Cruz. No hospital feels this more sensibly than the New Orleans Charity Hospital. Some remarks on this subject, by a New Orleans physician, are recollected, but the paper is not at hand.

These remarks are not caused by a desire to disparage the Charity Hospital. On the contrary, this hospital has been one of the most useful in our country; and the city of New Orleans, and the people of Louisiana, ought to be proud of such an institution, and give it a liberal support. But *toujours peridrix* had so often been sounded in my ears, that I determined to institute an inquiry on the first opportunity.

I have spoken of incompetent physicians in our hospital, and we will now turn to a more agreeable subject, that of rendering "unto Cæsar the things which are Cæsar's." Drs. Barnes, Compton, and Fourniquet, employed young physicians of New Orleans, did excellent service, managing the sick judiciously. Dr. E. De la Puente, a Spanish physician of Vera Cruz, educated in his profession at the University of Pennsylvania, did good service, both as a physician and by his knowledge of the Spanish language. Assistant-Surgeon P. G. S. Ten Broeck, U. S. A., put in order a mismanaged division of the hospital, his "illustrious predecessor," an employed physician from New Orleans, having been found wholly incompetent. Assistant-Surgeon John Campbell, U. S. A., who was on duty in the city of Vera Cruz but a short time, was zealous, efficient, and did good service. This gentleman had a severe attack of fever at the Castle of San Juan de Ulua, to which fortress he had been ordered. Dr. Hankel, employed physician, did good service; nor must I omit Mr. Willy, medical student from New Orleans, who came out as one of the stewards, to see disease in all forms, and who performed excellent service. To all of these gentlemen, with Assistant-Surgeon Laub, U. S. A., I am under obligations, and their assistance, in trials and difficulties, will never be forgotten. Here ends the communication to the Surgeon-General.

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ART. II.—*Surgical Cases. Aneurismal Tumours upon the Ear, successfully treated by the Ligation of both Carotids.—Recto-Vaginal Fistula, cured by Operation.* By R. D. MUSSEY, M. D., Professor of Operative Surgery in the Miami Medical College, at Cincinnati, Ohio.

CASE I. *Aneurismal Tumours upon the Ear treated by Ligation of both Carotids.*—Early in November last, Luther Gordon, æt. 19, accompanied by his physician, Dr. Kramer, came from Indiana, with his head bound up, to this city, on account of aneurismal tumours upon his left ear, and was admitted into St. John's Hospital.